BRUHATH BENGALURU MAHANAGARA PALIKE

# QC REPORT

Name of Work: Restoration and Improvements of roads at Hesaraghatta main road, G - Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, Adityanagara Phase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

# CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

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## QC ABSTRACT

Name of Work:Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

| Sl. No. | Item | Quantity As Per BOQ | Required No's of testes | Actual No's of testes | Testes | Frequency |
|---|---|---|---|---|---|---|
| 1 | 1:4:8 | 61.18 Cum | 1 | 1 | Cement | One Test Per Lot |
| | | | | | Sand, Aggregates | |
| 2 | M20 | 66.06 Cum | 5 | 5 | Concrete Cube Compressive Strength | - |
| 3 | M20 | 15.85 Cum | 3 | 3 | Concrete Cube Compressive Strength | - |
| 4 | Steel | 7.38 Tonne | 1 | 1 | - | - |
| 6 | Slab (230mm) | 44.85 Sqm | 1 | 1 | Concrete Core Compressive Strength | - |
| 9 | GSB | 2419.13 Cum | 2 | 2 | - | - |
| 9 | WMM | 3225.50Cum | - | - | - | - |
| | | Gradation | 17 | 17 | - | - |
| | | AIV | 4 | 4 | - | - |
| | | Shape Test | 7 | 7 | - | - |
| | | Atterberg Limits | 17 | 17 | - | - |
| 10 | DBM | 806.38 Cum | - | - | - | - |
| | | Quality of Binder | 1 | 1 | - | - |
| | | AIV | 1 | 1 | - | - |
| | | Shape Test | 1 | 1 | - | - |
| | | Gradation | 1 | 1 | - | - |
| | | Specific Gravity | 1 | 1 | - | - |
| | | Stability of Mix | 1 | 1 | - | - |
| | | Bitumen content | 1 | 1 | - | - |
| 11 | BC | 645.10 Cum | - | - | - | - |
| | | Quality of Binder | 1 | 1 | - | - |
| | | AIV | 1 | 1 | - | - |
| | | Shape Test | 1 | 1 | - | - |
| | | Gradation | 1 | 1 | - | - |
| | | Specific Gravity | 1 | 1 | - | - |
| | | Stability of Mix | 2 | 2 | - | - |
| | | Bitumen content | 2 | 2 | - | - |

Cubes: 0-5 Cum 1Set; 6-15 Cum 2Set; 16-30 Cum 3Set; 31-50 Cum 4Set; Add 1set for extra 50Cum

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 30.03.2022

## TEST REPORT

| | | |
|---|---|---|
| **CLIENT** | : | **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore. |
| **AGENCY** | : | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **NAME OF THE WORK** | : | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **SAMPLE ID** | : | Cement (Zuari OPC 53 Grade) |
| **DATE OF MANUFACTURE** | | Febraury - 2022 |
| **DATE OF TESTING** | | 28.03.2022 to 30.03.2022 |
| **SAMPLES SUPPLIED BY** | : | AGENCY |

The results of the tests conducted on the cement sample are as follows:

| Sl.No | Descriptions | Test Method as per IS | Test Result | Requirements as per IS: 269-2015 |
|---|---|---|---|---|
| 1 | a) Initial Setting Time | IS-4031 (Part -5) | 140 Minutes | Not Less than 30 Minutes |
| | b) Final Setting Time | IS-4031 (Part -5) | 330 Minutes | Not More than 600 Minutes |
| 2 | Soundness | IS-4031 (Part 3) by the Le-Chatelier method | 1 mm | Not more than 10 mm |
| 3 | Standard Consistency | IS-4031 (Part -4) | 29.00 % | - |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 30.03.2022

## TEST REPORT ON FINE AGGREGATES (SAND)

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.
**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.
**Name of Work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.
Date of Testing : 30.03.2022
IS Code : IS 383:2016
: IS 2386 (Part 1):1963(RA 2011)
Material : Sand

Total Wt. of Aggregates in gms 1000

| Is Sieve Size in mm | Weight Retained (gm) | Retained Weight in % | Cumulative Retained Weight in % | Cumulative Weight Passing in % | Spec.Limits For Zone-II |
|---|---|---|---|---|---|
| 10 | 0 | 0 | 0 | 100 | 100 |
| 4.75 | 89 | 8.90 | 8.90 | 91.1 | 90-100 |
| 2.36 | 126 | 12.60 | 21.50 | 78.5 | 75-100 |
| 1.18 | 182 | 18.20 | 39.70 | 60.3 | 55-90 |
| 600 Micron | 165 | 16.50 | 56.20 | 43.8 | 35-59 |
| 300 Micron | 256 | 25.60 | 81.80 | 18.2 | 8-30 |
| 150 Micron | 138 | 13.80 | 95.60 | 4.4 | 0-10 |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 30.03.2022

## TEST REPORT ON FINE AGGREGATES (SAND)
IS 2116-1980

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Date of Testing** : 30.03.2022

**Material** : Sand - Masonry

Total wt. of aggregates in gms = 1000

| Is Sieve Size in mm | Weight Retained (gm) | Retained Weight in % | Cumulative Retained Weight in % | Cumulative Weight Passing in % | Spec.Limits as per IS 2116-1980 |
|---|---|---|---|---|---|
| 4.75 | 0 | 0.00 | 0.00 | 100.0 | 100 |
| 2.36 | 14 | 1.40 | 1.40 | 98.6 | 90-100 |
| 1.18 | 38 | 3.80 | 5.20 | 94.8 | 70-100 |
| 600 Micron | 84 | 8.40 | 13.60 | 86.4 | 40-100 |
| 300 Micron | 256 | 25.60 | 39.20 | 60.8 | 5-70 |
| 150 Micron | 489 | 48.90 | 88.10 | 11.9 | 0-15 |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 30.03.2022

## TEST REPORT ON COARSE AGGREGATES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

Date of Testing : 30.03.2022

IS Code : IS 383:2016

: IS 2386 (Part 1):1963(RA 2011)

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **15000**

| Is Sieve Size in mm | Weight Retained (gm) | Retained Weight in % | Cumulative Retained Weight in % | Cumulative Weight Passing in % | Spec.Limits |
|---|---|---|---|---|---|
| 80 | 0 | 0 | 0 | 100 | 100 |
| 40 | 195 | 1.30 | 1.30 | 98.70 | 95-100 |
| 20 | 8263 | 55.09 | 56.39 | 43.61 | 30-70 |
| 10 | 3256 | 21.71 | 78.09 | 21.91 | 10-35 |
| 4.75 | 2821 | 18.81 | 96.90 | 3.10 | 0-5 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 08.04.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for Raft

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 7th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 01.04.2022 | 08.04.2022 | 8.184 | 356.3 | 15.84 |
| 2 | 01.04.2022 | 08.04.2022 | 8.156 | 332.3 | 14.77 |
| 3 | 01.04.2022 | 08.04.2022 | 8.138 | 349.2 | 15.52 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 29.04.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for Raft

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 28th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 01.04.2022 | 29.04.2022 | 8.184 | 508.2 | 22.59 |
| 2 | 01.04.2022 | 29.04.2022 | 8.165 | 516.3 | 22.95 |
| 3 | 01.04.2022 | 29.04.2022 | 8.159 | 484.9 | 21.55 |

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Job No.: CACE/BBMP/KV/W.No 03/2021-22

Date: 02.05.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for wall

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 28th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 04.04.2022 | 02.05.2022 | 8.184 | 505.2 | 22.45 |
| 2 | 04.04.2022 | 02.05.2022 | 8.165 | 498.6 | 22.16 |
| 3 | 04.04.2022 | 02.05.2022 | 8.146 | 484.6 | 21.54 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 11.04.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for wall

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 7th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 04.04.2022 | 11.04.2022 | 8.169 | 336.3 | 14.95 |
| 2 | 04.04.2022 | 11.04.2022 | 8.184 | 345.2 | 15.34 |
| 3 | 04.04.2022 | 11.04.2022 | 8.152 | 352.1 | 15.65 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 02.05.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for wall

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 28th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 04.04.2022 | 02.05.2022 | 8.189 | 505.2 | 22.45 |
| 2 | 04.04.2022 | 02.05.2022 | 8.165 | 516.2 | 22.94 |
| 3 | 04.04.2022 | 02.05.2022 | 8.152 | 484.9 | 21.55 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 02.05.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for Raft

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 28th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 04.04.2022 | 02.05.2022 | 8.169 | 505.4 | 22.46 |
| 2 | 04.04.2022 | 02.05.2022 | 8.184 | 513.3 | 22.81 |
| 3 | 04.04.2022 | 02.05.2022 | 8.152 | 488.9 | 21.73 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 13.04.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete for wall

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 7th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 06.04.2022 | 13.04.2022 | 8.169 | 336.3 | 14.95 |
| 2 | 06.04.2022 | 13.04.2022 | 8.184 | 345.5 | 15.36 |
| 3 | 06.04.2022 | 13.04.2022 | 8.152 | 352.9 | 15.68 |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

# CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

**An ISO 9001-2015 Certified Company**

**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 16.04.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 7th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 09.04.2022 | 16.04.2022 | 8.185 | 358.0 | 15.91 |
| 2 | 09.04.2022 | 16.04.2022 | 8.192 | 334.2 | 14.85 |
| 3 | 09.04.2022 | 16.04.2022 | 8.165 | 351.2 | 15.61 |

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ಯಲಹಂಕ ಉಪನಗರ ಉಪವಿಭಾಗ,
ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು-106

For CIVIL AIM CONSULTANTS & ENGINEERS

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**An ISO 9001-2015 Certified Company**

**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 07.05.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 28th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 09.04.2022 | 07.05.2022 | 8.186 | 510.2 | 22.68 |
| 2 | 09.04.2022 | 07.05.2022 | 8.190 | 515.2 | 22.90 |
| 3 | 09.04.2022 | 07.05.2022 | 8.167 | 486.0 | 21.60 |

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**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 07.05.2022

## TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of the work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**Sample ID** : Cement Concrete

**Size of cubes** : 150mmx150mmx150mm

**Cross Sectional Area** : 22500 $mm^2$

**Technical Reference** : IS: 516-1959 (Reaffirmed 2008)

**Grade of Concrete** : $M_{20}$

**Compressive Strength as on** : 28th day

| Sl.No. | Date of casting | Date of testing | Weight of cube (Kg) | Failure load (KN) | Compressive strength ($N/mm^2$) |
|---|---|---|---|---|---|
| 1 | 09.04.2022 | 07.05.2022 | 8.189 | 508.2 | 22.59 |
| 2 | 09.04.2022 | 07.05.2022 | 8.165 | 517.2 | 22.99 |
| 3 | 09.04.2022 | 07.05.2022 | 8.152 | 492.9 | 21.91 |

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Job No: CACE/BBMP/KV/W.No.03/2021-22

Date : 18.04.2022

## GRADATION FOR GSB (Grading V)

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**BIS Code** : IS 2386 Part (1):1963
: IS 2720 part (5):1985

**Date of Testing** : 16.04.2022 to 18.04.2022

**Oven Dry Wt (gm) :** 13000

TABLE – 1

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirements as per MORTH 5th edition table 400.1 |
|---|---|---|---|---|---|
| 75 | 0 | 0 | 0.00 | 100 | 100 |
| 53 | 752 | 752 | 5.78 | 94.22 | 80-100 |
| 26.5 | 2162 | 2914 | 22.42 | 77.58 | 55-90 |
| 9.5 | 2085 | 4999 | 38.45 | 61.55 | 35-65 |
| 4.75 | 1892 | 6891 | 53.01 | 46.99 | 25-50 |
| 2.36 | 3692 | 10583 | 81.41 | 18.59 | 10-20 |
| 0.85 | 1758 | 12341 | 94.93 | 5.07 | 2-10 |
| 0.425 | 224 | 12565 | 96.65 | 3.35 | 0-5 |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


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Job No: CACE/BBMP/KV/W.No.03/2021-22

Date : 18.04.2022

## GRADATION FOR GSB (Grading V)

**Client** : **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of work** : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**BIS Code** : IS 2386 Part (1):1963
: IS 2720 part (5):1985

**Date of Testing** : 16.04.2022 to 18.04.2022

**Oven Dry Wt (gm) :** 13000

TABLE – 1

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirements as per MORTH 5th edition table 400.1 |
|---|---|---|---|---|---|
| 75 | 0 | 0 | 0.00 | 100 | 100 |
| 53 | 754 | 754 | 5.80 | 94.20 | 80-100 |
| 26.5 | 2164 | 2918 | 22.45 | 77.55 | 55-90 |
| 9.5 | 2090 | 5008 | 38.52 | 61.48 | 35-65 |
| 4.75 | 1890 | 6898 | 53.06 | 46.94 | 25-50 |
| 2.36 | 3690 | 10588 | 81.45 | 18.55 | 10-20 |
| 0.85 | 1760 | 12348 | 94.98 | 5.02 | 2-10 |
| 0.425 | 225 | 12573 | 96.72 | 3.28 | 0-5 |

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**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** : Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.

**Agency** : Sri. K Venkataraju, Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 20.04.2022 TO 22.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 20.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

**Note:**

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


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**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 20.04.2022 to 22.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 20.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 20.04.2022 to 22.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 19.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 20.04.2022 to 22.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 22.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 23.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 21.04.2022 to 23.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 19.50 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 23.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 21.04.2022 to 23.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 20.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 23.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 21.04.2022 to 23.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 21.50 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

**Note:**

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3. Any Query regarding the report must be reported within 30 days from the date of testing.

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

# CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

**An ISO 9001-2015 Certified Company**

**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 23.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 21.04.2022 to 23.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 22.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 23.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 21.04.2022 to 23.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 21.00 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


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# CIVIL AIM CONSULTANTS & ENGINEERS
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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 27.04.2022

## ATTERBERG LIMITS TEST FOR WMM

**Client** :**Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

**Agency** : **Sri. K Venkataraju,** Contractor, Bangalore.

**Name of Work** :Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2720(Part 5):1985

**Date of Testing** : 25.04.2022 to 27.04.2022

**Material Type** : Wet Mix Macadam

| Sl. No. | Particulars | Test Results | Requirement as per MORTH 5th edition Cl.406.2.1.2 |
|---|---|---|---|
| 1 | Liquid Limit | 19.50 | - |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 22.04.2022

## Aggregate Impact Value

| | |
|---|---|
| **Client** | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.** |
| **Agency** | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **IS Code** | IS 2386 (Part 4):1963(RA 2011) |
| **Type of Mix** | Wet Mix macadam |
| **Date of Testing** | 22.04.2022 |

| Sl No. | Details | Test No. | | Average |
|---|---|---|---|---|
| | | 1 | 2 | |
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 382 | 384 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 86 | 88 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 296 | 296 | |
| 4 | Aggregate Impact value = percent fines<br>100* ($W_2/W_1$)% | 22.51 | 22.92 | 22.71 |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

AE

**Note:**

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 25.04.2022

## Aggregate Impact Value

| | |
|---|---|
| **Client** | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.** |
| **Agency** | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **IS Code** | IS 2386 (Part 4):1963(RA 2011) |
| **Type of Mix** | Wet Mix macadam |
| **Date of Testing** | 25.04.2022 |

| Sl No. | Details | Test No. | | Average |
|---|---|---|---|---|
| | | 1 | 2 | |
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 382 | 384 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 86 | 88 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 296 | 296 | |
| 4 | Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$ | 22.51 | 22.92 | 22.71 |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 22.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 172 | 172 | 1.7 | 98.3 | 95-100 |
| 22.4 | 2435 | 2607 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2162 | 4769 | 47.7 | 52.3 | 40-60 |
| 4.75 | 1839 | 6608 | 66.1 | 33.9 | 25-40 |
| 2.36 | 1152 | 7760 | 77.6 | 22.4 | 15-30 |
| 0.600 | 549 | 8309 | 83.1 | 16.9 | 8-22 |
| 0.075 | 1362 | 9671 | 96.7 | 3.3 | 0-5 |

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Date : 22.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 22.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 179 | 179 | 1.8 | 98.2 | 95-100 |
| 22.4 | 2430 | 2609 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2158 | 4767 | 47.7 | 52.3 | 40-60 |
| 4.75 | 1832 | 6599 | 66.0 | 34.0 | 25-40 |
| 2.36 | 1168 | 7767 | 77.7 | 22.3 | 15-30 |
| 0.600 | 542 | 8309 | 83.1 | 16.9 | 8-22 |
| 0.075 | 1358 | 9667 | 96.7 | 3.3 | 0-5 |

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Date : 22.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 22.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 189 | 189 | 1.9 | 98.1 | 95-100 |
| 22.4 | 2420 | 2609 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2189 | 4798 | 48.0 | 52.0 | 40-60 |
| 4.75 | 1845 | 6643 | 66.4 | 33.6 | 25-40 |
| 2.36 | 1156 | 7799 | 78.0 | 22.0 | 15-30 |
| 0.600 | 535 | 8334 | 83.3 | 16.7 | 8-22 |
| 0.075 | 1285 | 9619 | 96.2 | 3.8 | 0-5 |

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Date : 22.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 22.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 180 | 180 | 1.8 | 98.2 | 95-100 |
| 22.4 | 2420 | 2600 | 26.0 | 74.0 | 60-80 |
| 11.2 | 2158 | 4758 | 47.6 | 52.4 | 40-60 |
| 4.75 | 1865 | 6623 | 66.2 | 33.8 | 25-40 |
| 2.36 | 1156 | 7779 | 77.8 | 22.2 | 15-30 |
| 0.600 | 535 | 8314 | 83.1 | 16.9 | 8-22 |
| 0.075 | 1285 | 9599 | 96.0 | 4.0 | 0-5 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 23.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 23.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 184 | 184 | 1.8 | 98.2 | 95-100 |
| 22.4 | 2426 | 2610 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2180 | 4790 | 47.9 | 52.1 | 40-60 |
| 4.75 | 1856 | 6646 | 66.5 | 33.5 | 25-40 |
| 2.36 | 1168 | 7814 | 78.1 | 21.9 | 15-30 |
| 0.600 | 525 | 8339 | 83.4 | 16.6 | 8-22 |
| 0.075 | 1298 | 9637 | 96.4 | 3.6 | 0-5 |

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Date : 23.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 23.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 189 | 189 | 1.9 | 98.1 | 95-100 |
| 22.4 | 2420 | 2609 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2189 | 4798 | 48.0 | 52.0 | 40-60 |
| 4.75 | 1845 | 6643 | 66.4 | 33.6 | 25-40 |
| 2.36 | 1156 | 7799 | 78.0 | 22.0 | 15-30 |
| 0.600 | 535 | 8334 | 83.3 | 16.7 | 8-22 |
| 0.075 | 1285 | 9619 | 96.2 | 3.8 | 0-5 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 27.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju,** Contractor, Bangalore.

Name of Work : Restoration and Improvements of Balance main and cross roads of Nagenahalli , HarohRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 27.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, gran 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 189 | 189 | 1.9 | 98.1 | 95-100 |
| 22.4 | 2426 | 2615 | 26.2 | 73.9 | 60-80 |
| 11.2 | 2158 | 4773 | 47.7 | 52.3 | 40-60 |
| 4.75 | 1830 | 6603 | 66.0 | 34.0 | 25-40 |
| 2.36 | 1185 | 7788 | 77.9 | 22.1 | 15-30 |
| 0.600 | 525 | 8313 | 83.1 | 16.9 | 8-22 |
| 0.075 | 1346 | 9659 | 96.6 | 3.4 | 0-5 |

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Authorised Signatory


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Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

# CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

**An ISO 9001-2015 Certified Company**

**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: .: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

| | |
|---|---|
| Client | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore** |
| Agency | **Sri. K Venkataraju,** Contractor, Bangalore. |
| Name of Work | RRestoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| BIS code: | IS 2386(Part 1) 1963 (RA 2011) |
| Type of Mix | Wet Mix Macadam |
| Date of Testing | 22.04.2022 |

| Sl no | Test | 1 | 2 | Requirements as per MORTH 5th edition table no 400.12 |
|---|---|---|---|---|
| 1 | Flakiness Index % | 10.90 | 11.20 | Combined Flakiness & Elongation index Max 35% |
| 2 | Elongation Index % | 12.60 | 12.80 | |
| | Combined Flakiness & Elongation index | 23.50 | 24.00 | |

**Note:**

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 22.04.2022

## Aggregate Impact Value

| | |
|---|---|
| **Client** | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.** |
| **Agency** | **Sri. K Venkataraju, Contractor, Bangalore.** |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **IS Code** | IS 2386 (Part 4):1963(RA 2011) |
| **Type of Mix** | Wet Mix macadam |
| **Date of Testing** | 22.04.2022 |

| Sl No. | Details | Test No. 1 | Test No. 2 | Average |
|---|---|---|---|---|
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 382 | 384 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 86 | 88 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 296 | 296 | |
| 4 | Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$ | 22.51 | 22.92 | 22.71 |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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ಯಲಹಂಕ ಉಪನಗರ ಉಪವಿಭಾಗ,
ಬ.ಬ.ಮ.ಪ. ಬೆಂಗಳೂರು-10

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory


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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 23.04.2022

## Aggregate Impact Value

| | |
|---|---|
| **Client** | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.** |
| **Agency** | **Sri. K Venkataraju, Contractor, Bangalore.** |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore |
| **IS Code** | IS 2386 (Part 4):1963(RA 2011) |
| **Type of Mix** | Wet Mix macadam |
| **Date of Testing** | 23.04.2022 |

| Sl No. | Details | Test No. 1 | Test No. 2 | Average |
|---|---|---|---|---|
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 384 | 382 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 86 | 88 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 298 | 294 | |
| 4 | Aggregate Impact value = percent fines 100* ($W_2/W_1$)% | 22.40 | 23.04 | 22.72 |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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**NABL Accredited As Per ISO/IEC 17025:2017 Laboratory**


Job No.: CACE/BBMP/KV/W.No.03/2021-22 Date : 22.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju, Contractor, Bangalore.**

Name of Work : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 22.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 184 | 184 | 1.8 | 98.2 | 95-100 |
| 22.4 | 2426 | 2610 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2180 | 4790 | 47.9 | 52.1 | 40-60 |
| 4.75 | 1856 | 6646 | 66.5 | 33.5 | 25-40 |
| 2.36 | 1168 | 7814 | 78.1 | 21.9 | 15-30 |
| 0.600 | 525 | 8339 | 83.4 | 16.6 | 8-22 |
| 0.075 | 1298 | 9637 | 96.4 | 3.6 | 0-5 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 22.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju, Contractor, Bangalore.**

Name of Work : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 22.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 180 | 180 | 1.8 | 98.2 | 95-100 |
| 22.4 | 2420 | 2600 | 26.0 | 74.0 | 60-80 |
| 11.2 | 2158 | 4758 | 47.6 | 52.4 | 40-60 |
| 4.75 | 1865 | 6623 | 66.2 | 33.8 | 25-40 |
| 2.36 | 1156 | 7779 | 77.8 | 22.2 | 15-30 |
| 0.600 | 535 | 8314 | 83.1 | 16.9 | 8-22 |
| 0.075 | 1285 | 9599 | 96.0 | 4.0 | 0-5 |

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Date : 23.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju, Contractor, Bangalore.**

Name of Work : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 23.04.2022

Material Type : Wet Mix Macadam

Oven Dry Wt, grar 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 189 | 189 | 1.9 | 98.1 | 95-100 |
| 22.4 | 2426 | 2615 | 26.2 | 73.9 | 60-80 |
| 11.2 | 2158 | 4773 | 47.7 | 52.3 | 40-60 |
| 4.75 | 1830 | 6603 | 66.0 | 34.0 | 25-40 |
| 2.36 | 1185 | 7788 | 77.9 | 22.1 | 15-30 |
| 0.600 | 525 | 8313 | 83.1 | 16.9 | 8-22 |
| 0.075 | 1346 | 9659 | 96.6 | 3.4 | 0-5 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22 Date : 23.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju, Contractor, Bangalore.**

Name of Work : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 23.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 195 | 195 | 2.0 | 98.1 | 95-100 |
| 22.4 | 2456 | 2651 | 26.5 | 73.5 | 60-80 |
| 11.2 | 2158 | 4809 | 48.1 | 51.9 | 40-60 |
| 4.75 | 1830 | 6639 | 66.4 | 33.6 | 25-40 |
| 2.36 | 1168 | 7807 | 78.1 | 21.9 | 15-30 |
| 0.600 | 525 | 8332 | 83.3 | 16.7 | 8-22 |
| 0.075 | 1358 | 9690 | 96.9 | 3.1 | 0-5 |

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Date : 27.04.2022

## GRADATION FOR WMM

Client : **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.**

Agency : **Sri. K Venkataraju, Contractor, Bangalore.**

Name of Work : Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore.

**IS Code:** : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 27.04.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Requirement as per MORTH 5th edition table no 400.13 |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 184 | 184 | 1.8 | 98.2 | 95-100 |
| 22.4 | 2426 | 2610 | 26.1 | 73.9 | 60-80 |
| 11.2 | 2180 | 4790 | 47.9 | 52.1 | 40-60 |
| 4.75 | 1856 | 6646 | 66.5 | 33.5 | 25-40 |
| 2.36 | 1168 | 7814 | 78.1 | 21.9 | 15-30 |
| 0.600 | 525 | 8339 | 83.4 | 16.6 | 8-22 |
| 0.075 | 1298 | 9637 | 96.4 | 3.6 | 0-5 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22 Date : 22.04.2022

## DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

| | |
|---|---|
| Client | : Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore. |
| Agency | Sri. K Venkataraju, Contractor, Bangalore. |
| Name of Work | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| BIS code: | IS 2386(Part 1) 1963 (RA 2011) |
| Type of Mix | Wet Mix Macadam |
| Date of Testing | 22.04.2022 |

| Sl no | Test | 1 | 2 | Requirements as per MORTH 5th edition table no 400.12 |
|---|---|---|---|---|
| 1 | Flakiness Index % | 11.00 | 11.40 | Combined Flakiness & Elongation index Max 35% |
| 2 | Elongation Index % | 13.10 | 13.30 | |
| | Combined Flakiness & Elongation index | 24.10 | 24.70 | |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22 Date : 27.04.2022

## DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

| | |
|---|---|
| Client | : Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore. |
| Agency | Sri. K Venkataraju, Contractor, Bangalore. |
| Name of Work | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No 03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| BIS code: | IS 2386(Part 1) 1963 (RA 2011) |
| Type of Mix | Wet Mix Macadam |
| Date of Testing | 27.04.2022 |

| Sl no | Test | 1 | 2 | Requirements as per MORTH 5th edition table no 400.12 |
|---|---|---|---|---|
| 1 | Flakiness Index % | 11.00 | 11.40 | Combined Flakiness & Elongation index Max 35% |
| 2 | Elongation Index % | 13.10 | 13.30 | |
| | Combined Flakiness & Elongation index | 24.10 | 24.70 | |

**Note:**
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Job No.: CACE/BBMP/KV/W.No.03/2021-22 Date : 27.04.2022

## DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

| | |
|---|---|
| Client | : Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore. |
| Agency | Sri. K Venkataraju, Contractor, Bangalore. |
| Name of Work | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| BIS code: | IS 2386(Part 1) 1963 (RA 2011) |
| Type of Mix | Wet Mix Macadam |
| Date of Testing | 27.04.2022 |

| Sl no | Test | 1 | 2 | Requirements as per MORTH 5th edition table no 400.12 |
|---|---|---|---|---|
| 1 | Flakiness Index % | 12.00 | 12.50 | Combined Flakiness & Elongation index Max 35% |
| 2 | Elongation Index % | 12.70 | 13.30 | |
| | Combined Flakiness & Elongation index | 24.70 | 25.80 | |

**Note:**

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 02.05.2022

## Aggregate Gradation Test

| | |
|---|---|
| **Client** | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.** |
| **Agency** | **Sri. K Venkataraju, Contractor, Bangalore.** |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **BIS Code** | IS 2386(Part 1):1963(RA 2011) |
| **Sample I / D** | Hot mix Plant, Bangalore. |
| **Type of Mix** | Dense Graded Bituminous Macadam |
| **Date of Testing** | 02.05.2022 |

Total Weight of Sample: 10000 gm

| SIEVE SIZE, mm | Weight Retained, gm | % Retained | Cummulative % Retained | % Passing | Requirement as per MORTH table 500.10 | Remarks |
|---|---|---|---|---|---|---|
| 37.50 | 0 | 0.0 | 0 | 100 | 100 | Gradation satisfies Grade II MORTH specification |
| 26.50 | 715 | 7.2 | 7.15 | 92.85 | 90 - 100 | |
| 19.00 | 1265 | 12.7 | 19.80 | 80.20 | 71 - 95 | |
| 13.20 | 1385 | 13.9 | 33.65 | 66.35 | 56 - 80 | |
| 4.75 | 2514 | 25.1 | 58.79 | 41.21 | 38 - 54 | |
| 2.36 | 1097 | 11.0 | 69.76 | 30.24 | 28 - 42 | |
| 0.300 | 1319 | 13.2 | 82.95 | 17.05 | 7 - 21 | |
| 0.075 | 1156 | 11.6 | 94.51 | 5.49 | 2 - 8 | |

Total Weight of Sample: 10000 gm

| SIEVE SIZE, mm | Weight Retained, gm | % Retained | Cummulative % Retained | % Passing | Requirement as per MORTH table 500.10 | Remarks |
|---|---|---|---|---|---|---|
| 37.5 | 0 | 0.0 | 0 | 100 | 100 | Gradation satisfies Grade II MORTH specification |
| 26.5 | 685 | 6.9 | 6.85 | 93.15 | 90 - 100 | |
| 19 | 1415 | 14.2 | 21.00 | 79.00 | 71 - 95 | |
| 13.2 | 1136 | 11.4 | 32.36 | 67.64 | 56 - 80 | |
| 4.75 | 2415 | 24.2 | 56.51 | 43.49 | 38 - 54 | |
| 2.360 | 1159 | 11.6 | 68.10 | 31.90 | 28 - 42 | |
| 0.300 | 1312 | 13.1 | 81.22 | 18.78 | 7 - 21 | |
| 0.075 | 1174 | 11.7 | 92.96 | 7.04 | 2 - 8 | |

**Note:**

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 04.05.2022

## Specific Gravity And Water Absorption Test

| | |
|---|---|
| **Client** | **Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore.** |
| **Agency** | **Sri. K Venkataraju, Contractor, Bangalore.** |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **BIS Code** | IS 2386(Part 3):1963 |
| **Type of Mix** | Dense Graded Bituminous Macadam |
| **Date of Testing** | 02.05.2022 to 04.05.2022 |

| Sl. No. | Details | Notation | Test Number | | | Mean Value |
|---|---|---|---|---|---|---|
| | | | Test 1 | Test 2 | Test 3 | |
| 1 | Weight of aggregate suspended in water with the basket | $W_1$ g | 2020 | 2022 | 2023 | |
| 2 | Weight of basket suspended in water | $W_2$ g | 756 | 756 | 756 | |
| 3 | Weight of saturated aggregate in water | $(W_1 - W_2) = W_3$ g | 1264 | 1266 | 1267 | |
| 4 | Weight of saturated surface dry aggregate in air | $W_3$ g | 2017 | 2016 | 2015 | |
| 5 | Weight of water equal to the volume of the aggregate | $(W_3 - W_4)$ g | 753 | 750 | 748 | |
| 6 | Weight of oven dried aggregate | $W_4$ g | 2007 | 2007 | 2005 | |
| 7 | Specific Gravity | $W_4/(W_3-W_4)$ | 2.665 | 2.676 | 2.680 | 2.674 |
| 8 | Apparent Specific gravity | $W_4/(W_4-W_4)$ | 2.701 | 2.709 | 2.717 | 2.709 |
| 9 | Water Absorption | $((W_3-W_4)*100)/W_4$ | 0.50% | 0.45% | 0.50% | 0.48% |

**Comments:**
→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 05.05.2022

## Aggregate Impact Value

| | |
|---|---|
| **Client** | **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore. |
| **Agency** | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **BIS Code** | IS 2386(Part 4):1963 |
| **Source / Location** | Hot Mix Plant, Bangalore |
| **Type of Mix** | Bituminous Concrete |
| **Date of Testing** | 05.05.2022 |

| Sl No. | Details | Test No. | | Average |
|---|---|---|---|---|
| | | 1 | 2 | |
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 381 | 383 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 84 | 85.5 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 297 | 297.5 | |
| 4 | Aggregate Impact value = percent fines<br>100* ($W_2/W_1$) percent | 22.05 | 22.32 | 22.19 |

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date: 05.05.2022

## TEST REPORT

| | | |
|---|---|---|
| **Client** | : | **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore. |
| **Agency** | : | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **Name of the work** | : | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **IS Code** | : | IS 73:2013, IS 1203:1978(RA 2008), IS 1205:1978(RA 2009), IS 1208:1978(RA 2009), IS 1209:1978(RA 2009) |
| **Source of location** | : | Hot mix Plant, Bangalore, VG 30 |
| **Date of testing** | : | 05.05.2022 |

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

| Sl. No | Description | Test Result | Requirement as per IS:73:2013 |
|---|---|---|---|
| 1 | Penetration at 25 $^{0}$C, 1/10 mm | 48 | Min 45 |
| 2 | Softening point, $^{0}$C | 54 | Min. 47 |
| 3 | Ductility at 27$^{0}$C, cm | > 100 | Min. 40 |
| 4 | Flash Point, $^{0}$C | 272 | Min. 220 |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 07.05.2022

## Specific Gravity And Water Absorption Test

| | |
|---|---|
| **Client** | **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, |
| **Agency** | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **Name of the Work** | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **BIS Code** | IS 2386(Part 3):1963 |
| **Type of Mix** | Bituminous Concrete |
| **Date of Testing** | 05.05.2022 to 07.05.2022 |

| Sl. No. | Details | Notation | Test Number | | | Mean Value |
|---|---|---|---|---|---|---|
| | | | Test 1 | Test 2 | Test 3 | |
| 1 | Weight of aggregate suspended in water with the basket | $W_1$ g | 2020 | 2022 | 2024 | |
| 2 | Weight of basket suspended in water | $W_2$ g | 755 | 755 | 755 | |
| 3 | Weight of saturated aggregate in water | $(W_1 - W_2) = W_3$ g | 1265 | 1267 | 1269 | |
| 4 | Weight of saturated surface dry aggregate in air | $W_3$ g | 2016 | 2018 | 2020 | |
| 5 | Weight of water equal to the volume of the aggregate | $(W_3 - W_4)$ g | 751 | 751 | 751 | |
| 6 | Weight of oven dried aggregate | $W_4$ g | 2010 | 2011 | 2012 | |
| 7 | Specific Gravity | $W_4/(W_3-W_4)$ | 2.676 | 2.678 | 2.679 | 2.678 |
| 8 | Apparent Specific gravity | $W_4/(W_4-W_4)$ | 2.698 | 2.703 | 2.708 | 2.703 |
| 9 | Water Absorption | $((W_3-W_4)*100)/W_4$ | 0.30% | 0.35% | 0.40% | 0.35% |

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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Job No.: ~~CACE/BBMP/KV/W.No.03/2021-22~~ Date: 07.05.2022

## TEST REPORT ON STABILITY OF MIX

| | | |
|---|---|---|
| **Client** | : | **Assistant Executive Engineer,** Yelahanka New town Sub Division, BBMP, Bangalore. |
| **Agency** | : | **Sri. K Venkataraju,** Contractor, Bangalore. |
| **Name of the Work** | : | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| **Source of location** | : | Hot mix Plant, Bangalore |
| **Type of Mix** | : | Bituminous Concrete |
| **Date of Testing** | : | 07.05.2022 |

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

| Sl. No | Description | Test Result 1 | Test Result 2 | Requirement as per MORTH (Table 500-19) |
|---|---|---|---|---|
| 1 | Marshal Stability, Kn | 9.44 | 10.82 | 9 Kn (min) |
| 2 | Marshal flow, mm | 2.69 | 7.51 | 2 – 4 |
| 3 | Percent air voids in Mineral Aggregate | 13.45 | 14.52 | 13 – 15 |
| 4 | Voids in Compacted Mix | 3.84 | 4.15 | 3 – 6 |
| 5 | Percent Voids filled with Bitumen | 69.29 | 70.12 | 65 - 75 |
| 6 | Density, g/cc | 2.25 | 2.26 | -- |

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Job No.: CACE/BBMP/KV/W.No.03/2021-22

Date : 07.05.2022

## BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

**AASHTO T 164 & AASHTO T 30**

| | |
|---|---|
| LIENT | Assistant Executive Engineer, Yelahanka New town Sub Division, BBMP, Bangalore. |
| GENCY | Sri. K Venkataraju, Contractor, Bangalore. |
| AME OF THE WORK | Restoration and Improvements of roads at Hesaraghatta main road, G Ramaiah layout, Sai Archade layout, Vijaya Bank Layout, AdityanagaraPhase-02 and surrounding areas in Ward No.03 of Yelahanka New town Sub Division (Package No-09), BBMP, Bangalore. |
| AMPLE ID | Hot Mix Plant, Bangalore |
| ATE OF TESTING | 07.05.2022 |

**ITUMEN CONTENT DETERMINATION**

| Description | Sample 1 | Sample 2 |
|---|---|---|
| Weight of Mixture before Test, g | 500 | 500 |
| Weight of Mixture after Test, g | 472 | 472.5 |
| Weight of Asphalt and Mineral matter Extracted, g | 28 | 27.5 |
| Weight of Mineral Matter, g. | - | - |
| Weight of Ash, g | - | - |
| Weight of Bitumen Extracted, g. (corrected) | 28 | 27.5 |
| Bitumen content in % | 5.60 | 5.50 |
| Average | 5.55 | |

**RADATION AFTER EXTRACTION**

| SIEVE SIZE mm | Test 1 | | | | Requirement as per MORTH table 500.17 |
|---|---|---|---|---|---|
| | Weight Retained, gm | Cummulative Weight Retained | %Cummulative Retained | % Passing | |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 13.8 | 13.8 | 2.9 | 97.1 | 90 - 100 |
| 9.5 | 65.8 | 79.6 | 16.9 | 83.1 | 70 - 88 |
| 4.75 | 90.3 | 169.9 | 36.0 | 64.0 | 53 - 71 |
| 2.36 | 46.2 | 216.1 | 45.8 | 54.2 | 42 - 58 |
| 1.18 | 35.8 | 251.9 | 53.4 | 46.6 | 34 - 48 |
| 0.600 | 55.3 | 307.2 | 65.1 | 34.9 | 26 - 38 |
| 0.300 | 42.8 | 350 | 74.2 | 25.8 | 18 - 28 |
| 0.150 | 34.9 | 384.9 | 81.5 | 18.5 | 12 - 20 |
| 0.075 | 42.8 | 427.7 | 90.6 | 9.4 | 4 - 10 |

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| SIEVE SIZE mm | Test 2 | | | | Requirement as per MORTH table 500.17 |
|---|---|---|---|---|---|
| | Weight Retained, gm | Cummulative Weight Retained | %Cummulative Retained | % Passing | |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 14.9 | 14.9 | 3.2 | 96.8 | 90 - 100 |
| 9.5 | 66.2 | 81.1 | 17.2 | 82.8 | 70 - 88 |
| 4.75 | 92.8 | 173.9 | 36.8 | 63.2 | 53 - 71 |
| 2.36 | 45.3 | 219.2 | 46.4 | 53.6 | 42 - 58 |
| 1.18 | 48.2 | 267.4 | 56.6 | 43.4 | 34 - 48 |
| 0.600 | 56.3 | 323.7 | 68.5 | 31.5 | 26 - 38 |
| 0.300 | 45.8 | 369.5 | 78.2 | 21.8 | 18 - 28 |
| 0.150 | 37.9 | 407.4 | 86.2 | 13.8 | 12 - 20 |
| 0.075 | 32.6 | 440 | 93.1 | 6.9 | 4 - 10 |

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| SIEVE SIZE mm | Test 2 | | | | |
|---|---|---|---|---|---|
| | Weight Retained, gm | Cummulative Weight Retained | %Cummulative Retained | % Passing | Requirement as per MORTH table 500.17 |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 14.5 | 14.5 | 3.1 | 96.9 | 90 - 100 |
| 9.5 | 62.8 | 77.3 | 16.4 | 83.6 | 70 - 88 |
| 4.75 | 90.9 | 168.2 | 35.6 | 64.4 | 53 - 71 |
| 2.36 | 46.5 | 214.7 | 45.4 | 54.6 | 42 - 58 |
| 1.18 | 43.8 | 258.5 | 54.7 | 45.3 | 34 - 48 |
| 0.600 | 52.4 | 310.9 | 65.8 | 34.2 | 26 - 38 |
| 0.300 | 49.3 | 360.2 | 76.2 | 23.8 | 18 - 28 |
| 0.150 | 35.6 | 395.8 | 83.8 | 16.2 | 12 - 20 |
| 0.075 | 40.8 | 436.6 | 92.4 | 7.6 | 4 - 10 |

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